Comments on DEC/DEP Late Filed Exhibit One

Introduction

Cherokee County Cogeneration Partners, LLC ("Cherokee") provides these comments on the Late Filed Exhibit One filed by Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP") (collectively, "Duke"). We begin by providing a high-level overview of the problems raised by Late Filed Exhibit One. DEC/DEP filed the Late Filed Exhibit on Wednesday, August 4, but then filed a corrected exhibit on Friday, August 6. References herein to the Late Filed Exhibit refer to the corrected version filed on August 6. Then we address the information added by DEC in its Late Filed Exhibit One to Mr. Freund's Direct Figure 1 (in our comments below, we refer to the information added by DEC as "DEC Late Filed Table 1"). As noted below, Cherokee's comments focus on information or data never provided by Duke previously,[1] such as recasting their Oct. 2018 offer which included no capacity payment and utilized a must-run contract, into a dispatchable, tolling agreement offer with a capacity payment. In other cases, the Late Filed Exhibit contains notes about assumptions that were not described in previous offers provided by DEC or DEP to Cherokee. In other cases, Cherokee has tried to reconcile the Late Filed Exhibit with information just received this week from Duke in response to discovery responses.

None of DEC's prices in the Late Filed Exhibit One provides a reasonable representation of DEC's avoided costs, either as of September 2018 when Cherokee established its Legally Enforceable Obligation ("LEO"), as of February 2021, or as of today. In seeking to avoid its legal obligations under PURPA, DEC has consistently presented offers to Cherokee that are not reasonable for Cherokee to accept. Its pricing calculations embed discretionary modeling assumptions that understate the value of Cherokee to DEC and its customers. DEC has attempted to render the dispute over the LEO moot by claiming that its latest avoided cost forecasts are in fact better than the rates Cherokee was entitled to as of September/October 2018. Yet, the data DEC provided in discovery responses backing up its calculations of September 2018 avoided costs confirm that the forecast energy value that DEC's customers would reap from continuing to contract with Cherokee is multiples of the value that DEC attributes to Cherokee as of September 2018.

[1] Mr. Freund's sworn testimony at hearing was that the "one thing that's missing" required to produce the Table requested by Chairman Williams was the energy valuation of Cherokee as of September 2018 (transcript, p. 385). Apparently, for that reason Mr. Freund relied upon Mr. Strunk's estimate of $43/kW-year (transcript, p. 383).

Cherokee encourages the Commission to scrutinize the rate table provided by DEC in the Late Filed Exhibit. Such scrutiny will reveal that reasonable valuations of the dispatchability of Cherokee and the benefit to the DEC system far exceed the $34.97/kW-year energy value presented in DEC Late Filed Table 1 for the DEC Oct 2018 offer. Rather, DEC's own September 2018 modeling supports an energy value of $104/kW-year. Combining this energy value with the capacity value of $15.10/kW-year attributed by DEC, results in a rate for a 10-year tolling agreement of $119/kW-year, exclusive of start costs. We explain the basis for this updated rate in the sections below.

Cherokee's response analyzes each of the relevant rate calculations and highlights internal inconsistencies in DEC's modeling and areas where DEC has used discretion to undervalue the avoided cost rate applicable to Cherokee. Cherokee comments in turn on the following rates from DEC Late Filed Table 1: 1) DEC 2018 Strunk; 2) DEC Oct 2018; 3) DEC Sept 2020; and 4) DEC Feb 2021.

As detailed below, the rates presented by DEC require several corrections, as summarized in Table 1. In addition, Table 1 includes Cherokee's September 2020 counteroffer of $87.45/kW-year.[2]

Table 1: DEC Late Filed Table 1, with Corrections

Avoided Cost Component	DEC 2018 Strunk	DEC Oct 2018	DEC Sept 2020*	Cherokee Sep 2020	DEC Feb 2021*
Energy $/kW-year	$43.00	$103.65	$39.01		$31.44
Capacity $/kW-year	$47.00	$15.10	$35.68		$35.68
Total $/kW-year	$90.00	$118.75	$74.69	$87.45	$67.12

** We note that DEC's Sep 2020 and Feb 2021 offers incorporate other problematic assumptions that understate avoided costs, but corrections to these are not addressed in Table 1 because the record does not include all necessary information.*

DEC 2018 Strunk

DEC presents the rates in the Late Filed Exhibit on an apples-to-oranges basis. Mr. Strunk's $110/kW-year tolling agreement rate (DEC 2018 Strunk) includes compensation for start costs. Mr. Freund does not provide DEC's offers inclusive of start costs

[2] Reflects $7,520,640 of total annual revenues from monthly $/kW payments, divided by 86 MW of capacity.

because he noted on cross-examination that it is customary for DEC to pay start costs separately.[3] In order for DEC Late Filed Table 1 to provide apples-to-apples information to the Commission, it must remove start costs, approximately $20/kW-year, from Mr. Strunk's $110/kW-year tolling agreement rate. The resulting "DEC 2018 Strunk" rate for comparison purposes is $90/kW-year.

In addition, we note that Mr. Strunk has used DEC's September 2018 modeling to determine the appropriate 10-year tolling agreement rate. Mr. Strunk's updated value, based on DEC's own modeling of its September 2018 avoided costs, is $119/kW-year, exclusive of start costs, which a) reflects NERA's use of a production cost model to dispatch Cherokee against DEC's September 2018 hourly avoided cost forecast from 2021 to 2030 (the term of a 10-year tolling agreement), resulting in $104.65/kW-year of avoided energy costs, plus b) $15.10/kW-year of avoided capacity costs (this being DEC's modeling as of Oct 2018).

In comparison to the DEC September 2018 rate in the Late Filed Exhibit, Mr. Strunk's $119/kW-year value represents a more reasonable 10-year tolling agreement avoided cost rate as of October 2018 than the one presented by Duke. Mr. Strunk's approach uses DEC's actual hourly avoided production costs from DEC's modeling performed in September 2018. In contrast, DEC's Oct 2018 purported avoided energy value of $34.97/kW-year was based on DEC modeling performed recently by DEC for the purposes of this proceeding and whereas DEC has not provided detailed inputs and outputs from that modeling (making a proper critical review of that modeling impossible, despite what DEC provided in response to Cherokee's Third set of Interrogatories).

DEC Oct 2018

The DEC Oct 2018 pricing shown by Duke in the Late Filed Exhibit has the following problems.

A. **Understates Energy Value.** The energy valuation provided by Duke for "DEC Oct 2018" should not be relied upon by the Commission as it is patently inconsistent with DEC's September 2018 avoided cost modeling results.

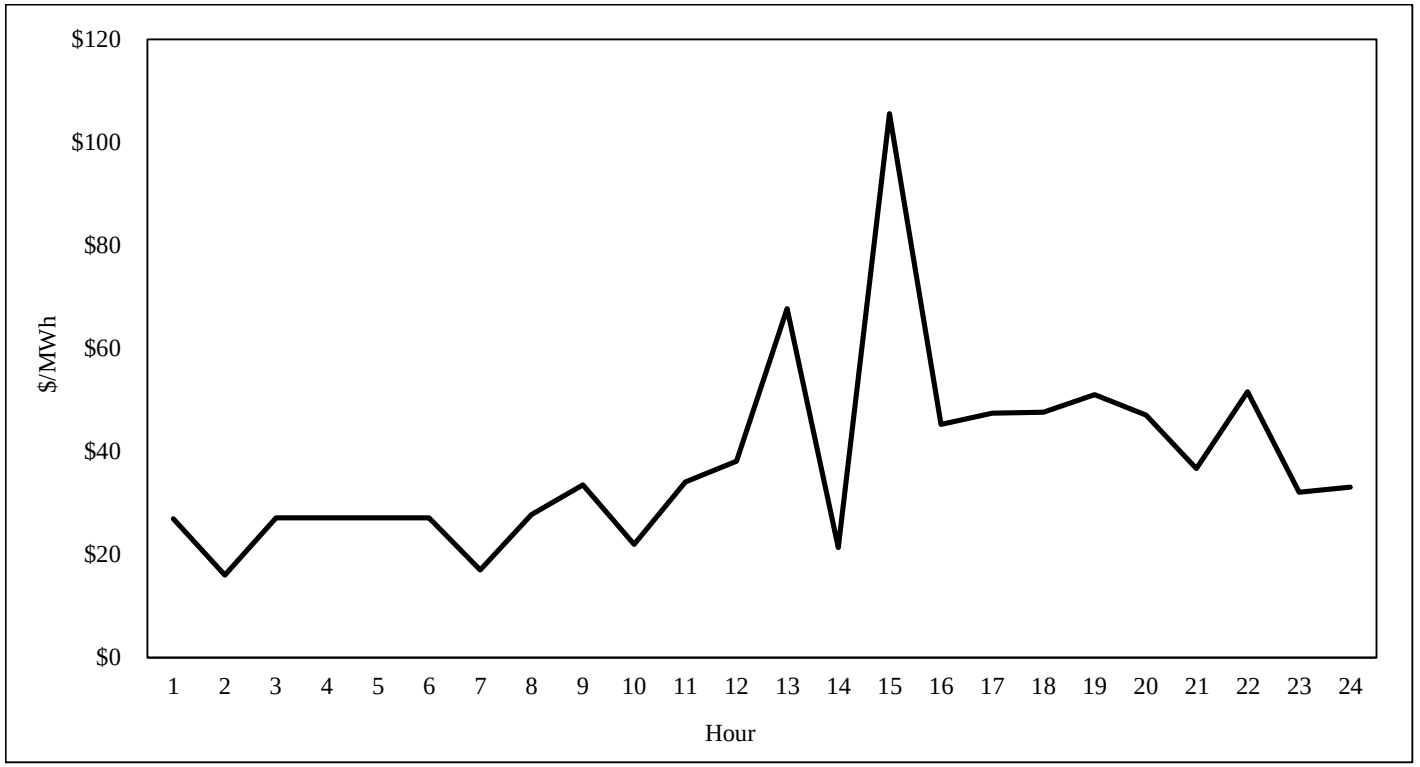
In order to assess the DEC Oct. 2018 rate shown in the Late Filed Exhibit, it is important to note that avoided cost contract prices typically build in an averaging of energy values over different times. Because load and resource conditions on the power grid vary from moment to moment, avoided energy costs can be very different at different times in the day, on weekends as compared to weekdays, and during different times of the year. As such, the avoided energy cost forecast upon which a QF contract price is based tends to be quite granular, even if the valuation of the QF energy ultimately averages the QF's value across multiple time periods in

[3] *See* Hearing Transcript, cross-examination of Mr. Freund, p. 357 (when asked whether he agrees that startup costs should be paid in a dispatchable tolling agreement structure, Mr. Freund stated, "It's traditional in these types of contracts or capacity-type contracts").

order to price the contract. (For example, DEC's 2018 offer collapsed avoided energy costs into two periods: off-peak hours and on-peak hours.)

In discovery, DEC provided the September 2018 forecasts of hourly avoided energy costs that supported its October 2018 offer to Cherokee. These forecasts also cover the term of a 10-year tolling agreement now under consideration for the period 2021-2030. These hourly avoided energy costs can be volatile and differ across the hours of each day.

Figure 1: Avoided Energy Costs on June 21, 2023

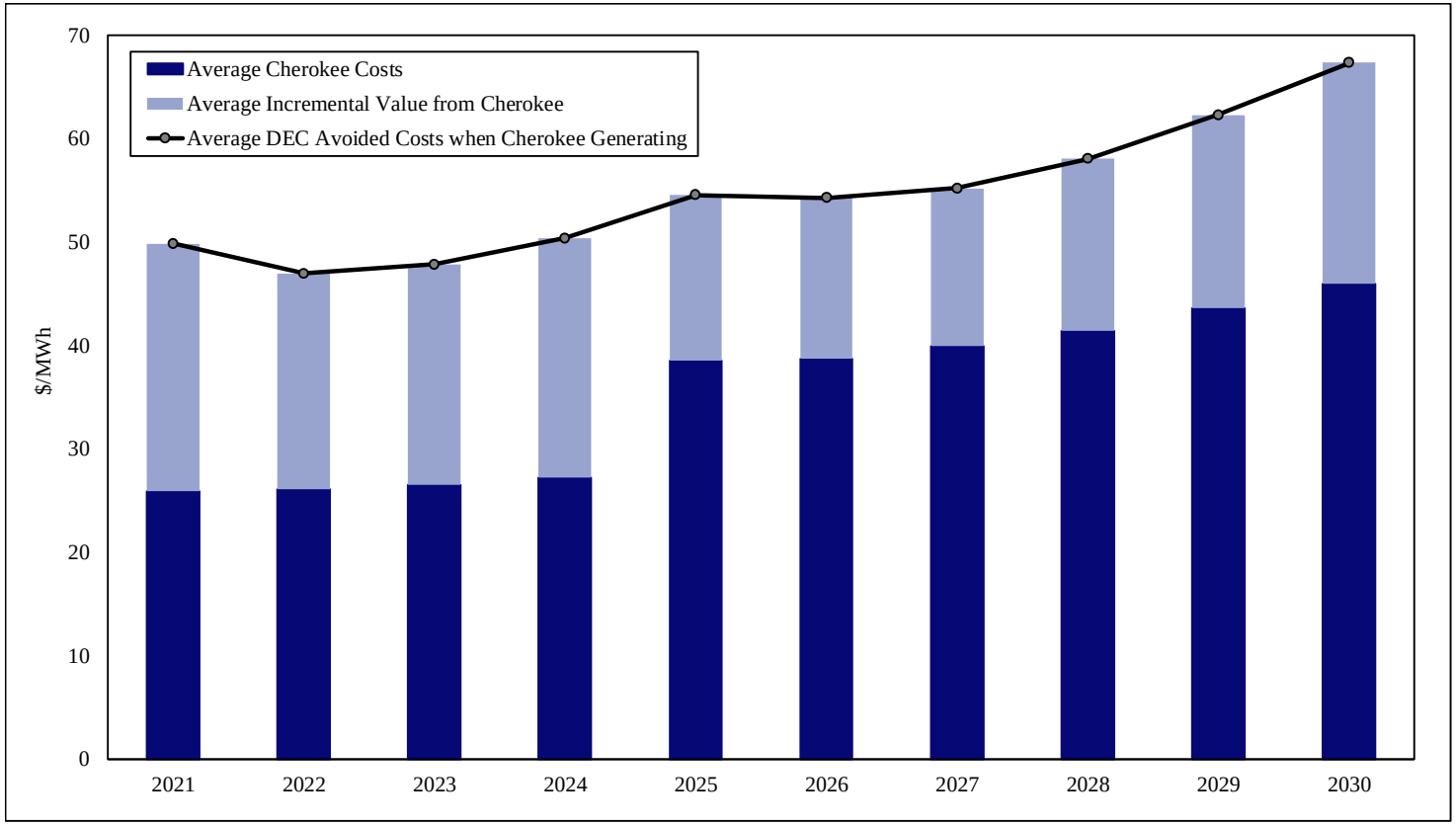


It is important to realize that in the low avoided energy cost hours, under a tolling agreement, DEC would elect not to dispatch Cherokee. DEC would only dispatch Cherokee during higher cost hours, when the energy value to the system exceeds Cherokee's

dispatch costs. Because of this, it is important to recognize that Cherokee will be delivering energy when it is most valuable to the grid (*i.e.*, when energy costs are high). It is appropriate to recognize, then, that the average avoided energy cost during the hours when Cherokee is dispatched will be above the average avoided energy cost across all hours.

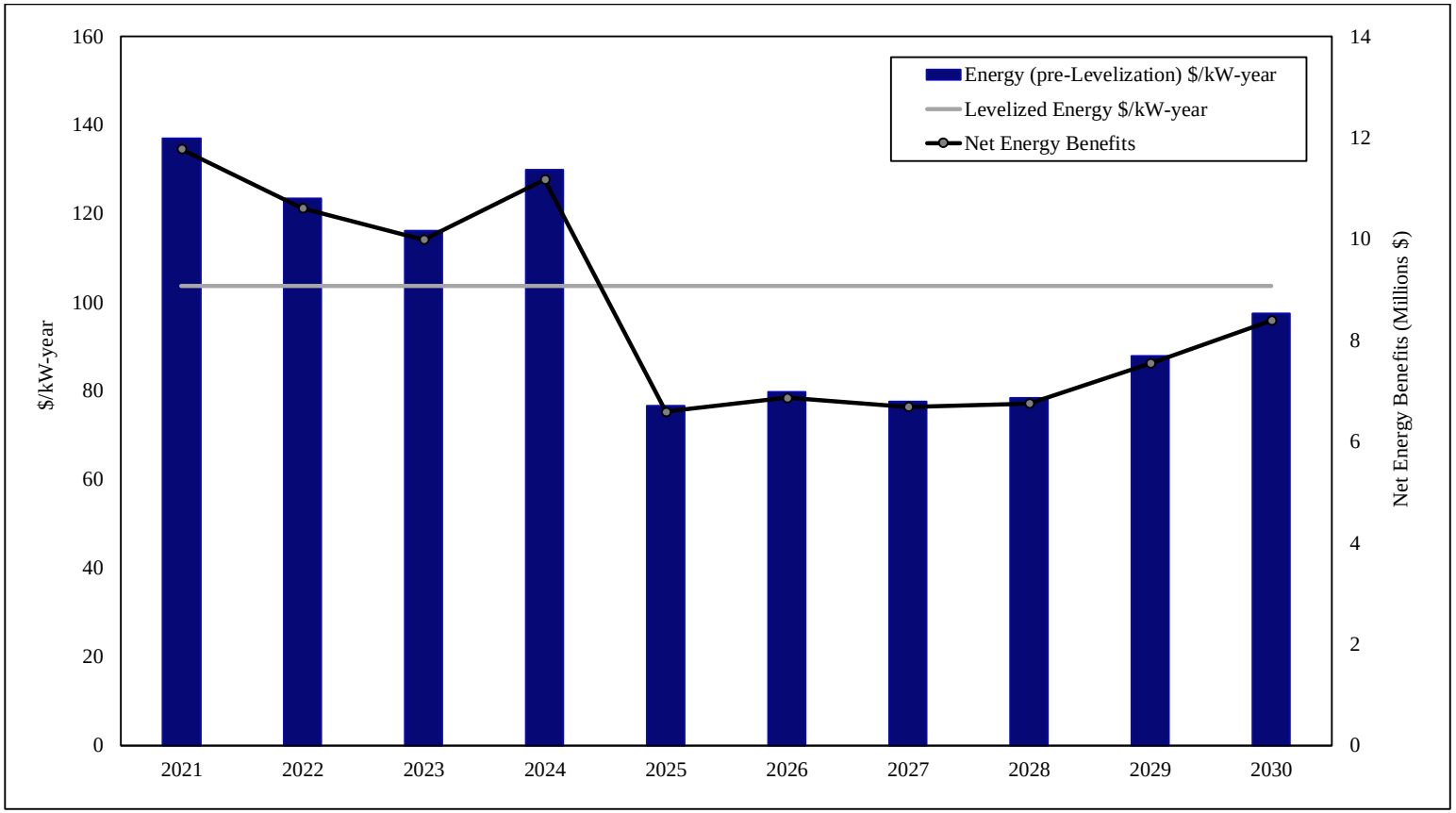
In order to better assess the rates in the Late Filed Exhibit, it is important to better understand the energy value of Cherokee—meaning the avoided energy cost in hours when Cherokee is reasonably expected to be called upon. In this regard, NERA used a production cost simulation model, Energy Exemplar's PLEXOS model. NERA dispatched Cherokee against the September 2018 hourly energy avoided cost forecast that underlies DEC's October 2018 offer to Cherokee. NERA considered the value of dispatching Cherokee over the course of the 10 years beginning January 1, 2021 and ending December 31, 2030. NERA's production cost modeling used the fuel cost inputs from DEC's September 2018 Prosym modeling, as provided by DEC in discovery. While DEC did not model the Cherokee extension in its September 2018 Prosym modeling, DEC provided in discovery the technical characteristics of DEC's modeling of the Cherokee extension in DEC's Feb-2021 Prosym modeling. NERA then used the same technical characteristics. The result confirmed the statements Mr. Strunk made in rebuttal—*i.e.*, that not capturing Cherokee's dispatch flexibility leads to a conservative estimate of the energy value and appropriate compensation to Cherokee for DEC's avoided energy costs. Figure 2 below shows the avoided energy costs in those hours when Cherokee is called upon in comparison to DEC's forecast dispatch cost of Cherokee (based on NERA's production cost modeling and DEC's September 2018 avoided cost prices).

Figure 2: Avoided Energy Valuation of Cherokee ($/kW-year)



The average avoided energy cost when Cherokee is expected to be dispatched is $54/MWh, while the average Cherokee dispatch cost is $35/MWh (each is averaged over the entire 10-year term, without levelizing). Over the course of the 10-year tolling agreement, having the Cherokee resource will displace other more expensive resources on the DEC system. The levelized $/kW-year energy value over the 10-year term is $104/kW-year.

Figure 3: Energy Value ($/kW-year)



Adding Freund's estimate of $15.10/kW-year for capacity on top of the $104/kW-year energy value leads to a $119/kW-year total value, based on DEC's own modeling, exclusive of start costs. To be consistent with Commission Order No. 2016-349, it is Cherokee's position that a full avoided cost capacity payment of $57/kW-year is warranted. Nevertheless, Cherokee recognizes that the all-in price of $119/kW-year is within the zone of reasonableness for avoided cost pricing as of the date of its LEO.

B. **Not an actual offer.** For purposes of clarification, the "DEC Oct 2018" column in Late Filed Exhibit One was not DEC's avoided cost rate proposal to Cherokee in October of 2018. Instead, and as indicated in Late-Filed Exhibit One, the "DEC Oct 2018" column includes "the avoided cost components for a 10-year dispatchable tolling PPA capacity rate" that had been given to the ORS in response to a data request made in this Docket. DEC did not offer Cherokee a 10-year dispatchable tolling Power Purchase Agreement ("PPA") in October of 2018. Instead, on October 31, 2018 DEC offered Cherokee a "must-take" PPA with a 5-year term, with energy-only rates (no compensation of capacity value), despite the fact that the existing PPA between DEC and Cherokee was a dispatchable tolling agreement with a 7.5-year term, and despite the fact that the parties had operated under a dispatchable arrangement beginning in 2001. (In 2001 DEC and Cherokee voluntarily modified the unworkable must-take agreement to make it dispatchable.)

C. **Relies on Transco Zone 5 gas costs.** While DEC has not provided comprehensive assumptions and inputs to its modeling for the "DEC Oct 2018" entry, we presume that DEC used Transco Zone 5 gas costs, as DEC titled its spreadsheet related to its calculation "Cherokee_SC DEC dispatchable pricing_(Sept 2018_**Z5**)_02.25.21 v0_ls(CONFIDENTIAL in Part)" (emphasis added). Yet, Cherokee's 2012 PPA had Transco Zone 4 as the reference gas price and DEC's own avoided cost modeling performed in Sept 2018 assigned Zone 4 prices to Cherokee. DEC's seemingly opportunistic use of Z5 prices biases Cherokee's costs upwards and this shows a lower avoided cost value for Cherokee.

Table 2 below compares the rates in question based on Cherokee's 2018 LEO.

Table 2: Comparison of Avoided Cost Rates Applicable to Cherokee 2018 LEO

		Cherokee		DEC
Avoided Cost Component	**Units**	**DEC October 2018 (Strunk Testimony)**	**DEC October 2018 (NERA Production Cost Modeling using DEC Avoided Costs)**	**DEC October 2018 (Late Filed Exhibit)**
Energy	$/kW-year	$43.00	$103.65	$34.97
Capacity	$/kW-year	$47.00	$15.10	$15.10
Total	**$/kW-year**	**$90.00**	**$118.75**	**$50.06**

Table 2 above demonstrates that DEC's Oct 2018 tolling agreement rate is unjust and unreasonable and inconsistent with its own hourly avoided cost forecasts from September 2018. Table 2 also demonstrates that Mr. Strunk's $110/kW-year tolling agreement rate supported in testimony and at hearing is conservative, particularly because, after excluding start costs, Mr. Strunk's tolling agreement rate is $90/kW-year—significantly lower than the $119/kW-year tolling agreement rate based on DEC's modeling results.

DEC Sept 2020

The DEC Sept 2020 rate shown in the Late Filed Exhibit has the following problems.

D. **Ignores PURPA-mandated LEO.** DEC based its September 17, 2020 verbal offer on pricing information available as of September 2020, including a capacity need date taken from DEC's 2020 IRP. This approach incorrectly ignored the fact that Cherokee sent a letter of commitment to put capacity to DEC in September 2018 and has provided Duke with dispatchable energy for two decades.

E. **Misleadingly construed as a lower offer.** In a note in Late Filed Exhibit One, DEC suggests that its September 2020 offer is in fact more or less equivalent to its much lower February 2021 offer, due to a purported difference in start costs. Yet, DEC provides no evidence that the September 2020 offer (a verbal offer) had different start cost terms than its other offers. The Commission should view DEC's characterization of the September 2020 offer with skepticism. As noted at the hearing, the new tolling agreement rate will be substantially (*i.e.*, approximately 24%) below the existing tolling agreement rate.

F. **Verbal offer.** Duke provided Cherokee with a verbal offer, forcing all parties in this proceeding to rely on figures that are not easily verifiable by the Public Service Commission of South Carolina.

G. **Does not consider Cherokee counteroffer.** Cherokee countered with an offer ($87.45 /kW-year) in response to DEC's September 2020 offer. Cherokee was responding to Duke's consistent understatement of the Cherokee valuation. The counteroffer provides a more reasonable rate than the one presented by DEC, should the Commission elect to use September 2020 as the avoided cost valuation date.

DEC Feb 2021

The DEC Feb 2021 pricing provided by Duke has the following problems.

H. **Relies on Transco Zone 5 gas costs.** Duke's February 2021 offer unreasonably relies on Transco Zone 5 gas costs for the Cherokee plant, a suspect assumption given the fact that Duke's previous contract with Cherokee specifies Transco Zone 4 as the basis for its pricing and the Sept 2018 modeling of Cherokee by DEC also relied on Transco Zone 4 gas costs. DEC's new modeling choice of Zone 5 costs—a discretionary choice obfuscated by Duke's complex Prosym modeling—results in an overstatement of Cherokee dispatch costs and an understatement of Cherokee energy value. This choice alone therefore unreasonably understates the value of the Cherokee plant. The effect of this seemingly opportunistic discretionary modeling choice is at least $11/kW-year based on Mr. Strunk's comparison of Z4 and Z5 gas prices in DEC's modeling for its February 2021 offer.

I. **Stale gas costs.** Duke's modeling also uses stale gas prices that artificially lower the avoided cost payments owed to Cherokee under PURPA. Duke uses gas prices from August of 2020, out of sync with both Cherokee's LEO date of September 2018 and with the purported time of Duke modeling (February 2021). As DEC is well aware, forward gas prices were significantly higher as of Cherokee's LEO date in September of 2018 than in August of 2020, leading to artificially low avoided costs as the base of DEC's February 2021 offer.

J. **Ignores PURPA mandated LEO.** DEC based its February 10, 2021 offer on pricing information available as of February 2021, including a capacity need date taken from DEC's 2020 IRP. This approach again incorrectly ignores the fact that Cherokee had put capacity to DEC as early as September 2018 and has provided Duke with dispatchable energy for years. Plus, as will be explained in Cherokee's Proposed Order, the February 2021 offer was submitted after the complaint was filed in this proceeding and should not be considered as it violates PURPA.

K. **Not reflective of current avoided costs.** Gas prices are now higher than those relied upon by DEC in establishing the February 2021 offer. If the Commission does not find that Cherokee established a LEO in 2018, then the avoided cost rates should be set on more current data than is reflected in the August 2020 gas curves used by DEC in valuing avoided costs for the February 2021 offer. A more current avoided cost forecast will be higher with current gas curves, all else equal.

Table 3 below presents applicable $/kW-year rates for Cherokee consistent with DEC's estimates of avoided costs and model input assumptions and compares them with various DEC offers. Specifically, the rates shown under the "NERA" rubric are consistent with DEC's September 2018 avoided cost modeling. In contrast, the $50.06/kW-year DEC Oct 2018 rate presented in DEC Late Filed Table 1 (not shown below) is inconsistent with that modeling, and the NERA correction of that modeling is the $118.75/kW-year rate shown below. For completeness, Table 3 also includes DEC's September 2020 and February 2021 offers, but we stress that these offers understate the applicable avoided cost rate for Cherokee and are not based on DEC's avoided costs as of the 2018 LEO. In addition, they embed certain assumptions that lead to avoided costs rates that are below the rate appropriate for Cherokee, even if the Commission finds a LEO had not been established in 2018. Please note that for the DEC February 2021 offer we correct one of DEC's inappropriate assumptions. Yet correction of all inappropriate assumptions in DEC's modeling that led to the Sept 2020 and Feb 2021 offers is not practicable. As such, the rates shown under the DEC rubric should be considered illustrative and not rates that fully reflect the then-applicable avoided cost forecasts.

Table 3: Avoided Cost Rates Using NERA and DEC Methodologies

		NERA		DEC	
Avoided Cost Component	**Units**	**DEC October 2018 (Strunk Testimony)**	**DEC October 2018 (NERA Production Cost Modeling)[4]**	**DEC September 2020**	**DEC February 2021[5]**
Energy	$/kW-year	$43.00[6]	$103.65	$39.01	$31.44
Capacity	$/kW-year	$47.00	$15.10	$35.68	$35.68
Total	**$/kW-year**	**$90.00**	**$118.75**	**$74.69**	**$67.12**

In summary, Cherokee leaves the Commission with the following conclusions:

[4] The energy value of $103.65/kW-year is the result of NERA's production cost modeling (based on DEC's September 2018 modeling of its avoided costs). The capacity value is the amount attributed by DEC to Cherokee in its modeling of the October 2018 offer. See the discussion above in the comments on DEC's October 2018 offer for details.

[5] DEC's February 2021 offer, plus the adjustment to reflect Transco Zone 4 pricing instead of Transco Zone 5 pricing (a $10.65/kW-year adjustment). Yet, this offer is not applicable because it was presented after the initiation of this proceeding.

[6] NERA's calculated energy payment was reduced by $20/kW-year, the approximate value of start costs as calculated by Duke Witness Freund. This allows NERA's figures to be presented on an apples-to-apples basis with the other offers.

1. The applicable avoided cost rates for a 10-year dispatchable tolling agreement, consistent with Cherokee's 2018 LEO, is $118.75/kW-year—reflecting the value of dispatching Cherokee. Cherokee's pre-filed rate of $90.00/kW-year did not incorporate the value of dispatchability.

2. DEC understates the avoided cost rate applicable to Cherokee in a October 2018 tolling agreement. DEC's forecasted avoided costs from September 2018 undermine the purported values included in DEC Late Filed Table 1.

3. Even if the commission were to find that Cherokee did not establish a LEO in 2018, the appropriate avoided cost rates are higher than those provided in DEC Late Filed Table 1. DEC has made discretionary modeling adjustments that lead to unreasonably low avoided cost rates for Cherokee. Among these are: (a) using gas costs for Cherokee tied to Transco Z5 versus the lower Transco Z4 index; and (b) relying on stale gas costs from August 2020 that are lower than costs as of Cherokee's LEO date, February 2021, and lower than current gas prices as of the date of this filing.